

# Is a metaphysical theory of truthmakers possible?

*Josh Parsons – 5 January 2015*

**Abstract:** Truthmaker theorists typically claim not only that all truths have truthmakers (Truthmaker Maximalism), but also that there is some enlightening metaphysical theory to be given of the nature of those truthmakers (e.g. that they are Armstrongian states of affairs, or tropes, or concrete individuals). Call this latter thesis the "Material Theory Thesis" (it is the thesis that there is some true material theory of truthmakers). I argue that the Material Theory Thesis is inconsistent with Truthmaker Maximalism.

## 1 Classical Truthmaker Theory

What I will "Classical Truthmaker Theory" consists of the following two theses:

*Truthmaker Maximalism.* Every truth has a truthmaker. For purposes of this paper, I'm going to assume the "existence-entailment" account of truthmaking – that if a truth  $p$  has a truthmaker  $f$ , then, necessarily, if  $f$  exists,  $p$  is true. In earlier work (Parsons 1999; 2005) I've called this view "truthmaker essentialism", but it is now widely accepted as part of what is meant by "truthmaker". My arguments in this paper will all work on the weaker conception of truthmaking I recommended on which if a truth  $p$  has a truthmaker  $f$ , then,  $f$  is intrinsically such that  $p$  is true.

*The Material Theory Thesis.* There is a some substantive metaphysical theory - a "material theory of truthmakers", which, for each truthmaker  $f$ , and each truth  $p$  that  $f$  makes true, *explains* the fact that  $f$  makes  $p$  true, and does so in terms of the *nature* of  $f$ .

This, second, thesis deserves more explanation. Most truthmaker theorists (and it is these whom I call "classical truthmaker theorists") are not content to claim that for each truth there is a truthmaker and leave it at that. They want to theorise about the nature of the truthmakers; for example, David Armstrong famously believed that truthmakers are complex entities of a particular kind that he called "states of affairs" (Armstrong 1997); other truthmaker theorists favour tropes, or "moments" – particularised properties – as truthmakers (Mulligan, Simons, and Smith 1984); I myself tried to defend the view that ordinary concrete particulars can play the truthmaker role (Parsons 1999). These theories about the nature of truthmakers outrun the thesis of truthmaker maximalism; they are part of what Armstrong called the "material theory of truthmakers" as opposed to the "formal theory of truthmakers" (the existence-entailment account, and Truthmaker Maximalism itself, belong to the latter). Material theories of truthmakers are theories about the nature of those entities that play the truthmaker role (Are they complex? If so, what are their constituents? Are they simple? Are they abstract, or concrete? How do they relate to ordinary concrete particulars?). Such theorising must be constrained – it would be a poor material theory of truthmakers that said that an Armstrongian state of affairs in which the Eiffel tower and the colour red are the sole constituents makes true the truth that Socrates is snub-nosed. The constraint, I take it, is that a material theory of truthmakers is intended to explain how it is that the truthmakers make true the truths that they do.

As a paradigm of such an explanation, let's look at Armstrong's theory as it applies to simple subject-predicate truths. Let Rosie be a red rose. Consider the truth "Rosie is red". On Armstrong's view, the truthmaker for this is the state of affairs of Rosie's being red – a complex entity with two constituents: the universal redness, and a substratum, which we'll call "thin Rosie". Thin Rosie is what states of affairs that make some truth "about Rosie" true all have in common. Thin Rosie, however, cannot properly be said to be red; she is a "bare particular" with no properties at all. What we normally call "Rosie" – Thick Rosie – is a complex conjunctive state of affairs which has as its constituents all the states of affairs in which Thin Rosie is a constituent.

Armstrong's theory of states of affairs offers a distinctive analysis of instantiation. To instantiate a universal is to have it as a constituent (or perhaps, to be more careful, to have it as a constituent *in the right way*<sup>1</sup>). So it follows from this analysis and from the description of the nature of the state of affairs of Rosie's being red that that state of affairs is red. It also follows that Thick Rosie is red (since the constituent-of relation is transitive, and redness is the right sort of constituent of Thick Rosie). So Armstrong's theory in this case *explains* why the state of affairs of Rosie's being red makes it true that Rosie is red. Indeed it does so in a very strict sense of "explains": we can think of Armstrong as offering a Hempelian covering law explanation – a valid argument whose premises consist of a covering law (the analysis of instantiation) together with particular facts (a description of the constituents of the state of affairs in question). (Hempel 1966, chap. 5)

Armstrong's material theory is not the only one available, of course. But other theories follow the same pattern. The purpose of positing a material theory of truthmakers is to make it plausible that the things being posited can do the truthmaking required. And this "making it plausible" is exactly the idea behind Hempel's model of explanation. Armstrong's explanations cite an analysis of instantiation and the constituents of states of affairs as the explanans. Alternative material theories (say, theories on which truthmakers are tropes) might offer different explanans (tropes are simple, so they do not have constituents) – but the same game is being played: the trope theorist will explain why Rosie's redness trope makes it true that Rosie is red by appeal to a covering law concerning tropes in general, and a thesis about the nature of Rosie's redness trope, namely that it is a redness trope and belongs to Rosie. If properly stated these theses should entail that Rosie is red, thus explaining how that trope makes true the truth it does.

The Material Theory Thesis then, is the view that some such explanation is possible for every truthmaker; conjoined with Truthmaker Maximalism, this entails that some such explanation is possible for every truth. It is this last consequence that I believe is false – indeed, necessarily false – so the Material Theory Thesis and Truthmaker Maximalism are jointly inconsistent.

## 2 The inconsistency of the Material Theory Thesis with Maximalism

There are many arguments against Truthmaker Maximalism in the literature – arguments that certain kinds of truths do not, or cannot, have truthmakers. A popular case is that of certain kinds of universally quantified truths – the problem, as it is known, of general facts. Truthmaker Maximalists reply, in turn, by offering accounts of what makes these universally quantified truths true; accounts which anti-maximalists then reject as inconsistent or implausible. My aim is to take a step beyond this debate – my argument is that, no matter what form the correct material theory of truthmaking takes, it cannot explain why the truthmaker for some general fact makes it true. This is because material theories of truthmaking are theories about the natures of truthmakers, and a statement about the nature of a truthmaker cannot entail that a fully general truth is true.

Before I state that argument, though, I'd like to quickly review the problem of general facts, as I understand it; and to remove from consideration some other issues that are often confused with it, and some partial solutions that do not work in full generality.

---

1 This is to deal with a number of apparent counterexamples to the thesis that to instantiate a universal is to have it as a constituent, including but not limited to: (a) Higher-order states of affairs – on Armstrong's analysis of laws of nature, the truthmaker for a law is a state of affairs which has as its constituents two universals that are lawfully correlated and a higher-order necessitating relation. But we don't want to say that the truthmaker for Columb's law is itself charged (or do we?). Presumably this is because it has the universal charge as a constituent in a different way from the way that truthmaker for "Rosie is charged" has it. (b) It's unclear how the constituent relationships between states of affairs interact with the mereological relationships between thick particulars. The door of my house is red, so it has redness as a constituent. But my house has the door as a part – does that mean that my house has redness as a constituent? If so, then it has redness as a constituent in the "wrong" way, as my house is not red (or at least not red all over).

## 2.1 General facts

Probably the first discussion of the problem of general facts occurs in Bertrand Russell's *Lectures on Logical Atomism* (Russell 1985). Russell points out that the conjunctive fact that makes true, for each man  $x$ , that  $x$  is mortal does not make true the truth that all men are mortal. This is because the existence of the conjunctive fact (and its making true the corresponding conjunction) is consistent with the existence of some additional man who is not mortal. Russell concludes that there must be irreducibly general facts – facts that make true universally quantified truths (e.g. “all men are mortal”) – but which are not reducible to, or as we might say, supervenient on, any collection of particular facts – facts which make true subject-predicate truths (e.g. “Socrates is mortal”).

Truthmaker theorists have dealt with this problem in three different ways: (a) by abandoning Truthmaker Maximalism, substituting some weaker doctrine such as Bigelow's (1988, 132–134) “supervenience of Truth on Being”; (b) by arguing that Russell was mistaken, that there are ways to reduce general facts to particular ones; (c) by accepting Russell's conclusion and taking on the burden of explaining what the truthmakers for general facts are. This last is the path taken by Armstrong, who devotes chapter 13 of his (1997) to just such an explanation.

Of these three, strategy (a) need not detain us. My argument is that Truthmaker Maximalism is inconsistent with the Material Theory Thesis; it's a perfectly good response to that argument to reject Truthmaker Maximalism; so I have no objection to (a). It's the impossibility of strategy (c) that I am concerned with. In order that we may focus on that, I will briefly say something about (b).

I can't enumerate and answer all of the ways in which a philosopher might possibly use strategy (b). That should be unnecessary, however; Russell's argument stands on its own. Resisting most versions of strategy (b) is simply a matter of restating the argument, perhaps with a clearer example. A common version of (b) is the suggestion that the world as a whole makes true all general facts. Cheyne and Pigden (2006), for example, say that the fact that the world has the intrinsic nature it actually does makes it true that there are no unicorns – the idea being that if there were unicorns, the world would have to have the property of containing unicorns, an intrinsic property which it actually lacks.<sup>2</sup> This however ignores the fact that one way there could be unicorns is if the thing that is actually the world were one of two island universes, the other of which contained unicorns. This is simply an application of Russell's argument over again. The world's being the way it actually is may make it true that there are no unicorns *in the world*; but it does not make it true that that is the only world there is; therefore it does not make it true that there are no unicorns *tout court* (Parsons 2006).

One point that comes out of this discussion is that not every universally quantified truth gives rise to Russell's argument – some universally quantified truths could be made true by a truthmaker for some particular matter of fact. For example, the truth that there is no unicorn in my office (or for that matter, in the world) could be made true by the fact that my office (resp. the world) and its contents are arranged as they actually are. This is because it is extremely plausible that, as a matter of metaphysical necessity, my office could not be arranged as it actually is, and contain a unicorn. There is a very plausible connection between what sorts of parts an individual has and its intrinsic nature. So universally quantified truths that restrict themselves to the parts of some individual need no irreducibly general truthmakers. I'll reserve the term “general truth” for those universally quantified truths that do *not* have this feature, and “general fact” for whatever makes true a general truth.

Perhaps there is one way that strategy (b) can work: one could deny that it is a contingent matter which things there are.<sup>3</sup> Then Russell's counterexample wouldn't work, because there couldn't have

---

<sup>2</sup> For a similar, but earlier, attempt, see (Simons 1992).

<sup>3</sup> Arguably, this is the view of Wittgenstein's *Tractatus*. The underlying assumption here, that there could not have been anything other than what there actually is, has been held by Linsky and Zalta (1994) and, more recently, and on similar grounds, Williamson (2013).

been an extra non-mortal man in addition to all the the things there are actually are. It would take us beyond the scope of this paper to fully evaluate this option. Besides its *prima facie* implausibility, it essentially just shifts the problem of general facts to be a special case of the problem of finding truthmakers for necessary truths – and at the same time, it makes this problem harder, because the believer in necessity of existence must believe that there are some highly substantive necessary truths, namely, those concerning the cardinality of the world.

## 2.2 The impossibility of a material theory of general facts

Let us proceed then, to strategy (c). Armstrong's theory of states of affairs is, as before, a useful example. He embraces Russell's conclusion that there are irreducibly general facts, and proceeds to give a material theory of their nature. Armstrong already believes, for independent reasons, in higher-order states of affairs. These are states of affairs which have no substratum as a constituent, but in which universals or states of affairs themselves play the role that would normally be played by a substratum. Laws of nature, for example, on his view, posit relations between universals; they are made true by a state of affairs whose only constituents are universals and the higher-order relation of necessitation. Armstrong proposes that the truthmakers of general truths are an additional species of higher-order state of affairs, involving a universal, the aggregate of all particulars instantiating it, and the higher-order relation of *totalling*. Each such state of affairs makes it true that that aggregate contains all the instances of that universal. (Armstrong 1997, 199)

There are a couple of internal problems with this view that I would like to put to one side. First, Armstrong's view works best with restricted universal truths. The fact that all men are mortal is made true by the conjunctive states of affairs of that conjoins, for each man  $x$ , the state of affairs of  $x$ 's being mortal, and in addition, the totality states of affairs of those being the totality of the men. Fine; but what about the truth that there are no more than  $n$  things (where  $n$  is the number of actually existing things)? This is a general truth, but it doesn't fit the model of there being some aggregate object that is the totality of instances of some universal – there is no Armstrongian universal of thinghood, existence, or self-identity.

Armstrong does allow himself to speak of the property of self-identity, though he denies that it is a universal. He could generalise his view of totality states of affairs to allow that they may have properties (as opposed to universals) as constituents.<sup>4</sup> That would, however, be inconsistent with his other commitments. What Armstrong means by “property” (when these are distinguished from universals) is a way things might be that does not give rise to a respect of resemblance, and talk of which may be analysed away in terms of universals – properties are either universals or “ontological free lunches” in his terminology (Armstrong 1997, 12–13). If the property of self-identity is to play a role as a constituent in the irreducible general fact that “those are all things there are”, a role that cannot be played by any universal, then it is not an ontological free lunch.

Second, Armstrong's view that aggregates (rather than classes) are a relatum of the totalling relation leads to trouble. Consider a world  $w$  in which there are eight identical tin cubes of 1m width each, and these are the only tin cubes that there are, and that they are scattered around the world. Supposing that the property of being a tin cube is a universal, then the fact that there are no more than four tin statues is the totality state of affairs constituted by the universal of being a tin cube, the aggregate of the tin cubes, and the totalling relation. This state of affairs fails however, to make true the truth that there are no more than four tin cubes, because that very state of affairs could co-exist with a fifth tin statue in the following way. Consider a world  $w'$  in which those very cubes have been arranged into the shape of a 2m width cube, and all else remains the same. In  $w'$ , the very same

---

4 Indeed, Armstrong appears to do this: in discussing a different objection, he says in passing that “the [totalling] relation is supposed to hold between a property... (second class [i.e. non-universal] properties... being of course allowable) and an aggregate” (1997, 200). The parenthesised passage in quote makes the generalisation I am discussing. But he doesn't give a way of resolving the problem I mention in the text.

aggregate is the totality of all the tin cubes as in  $w$ , but  $w'$  it comprises five cubes – the original four 1m width cube and the one 2m width cube they compose.<sup>5</sup>

The obvious thing to do here is to replace Armstrong's use of aggregates with classes – for while the aggregate of all the tin statues is the same in  $w'$  as in  $w$ , the class of all the tin statues is different. Again, however, this creates problems elsewhere in Armstrong's metaphysics – he has his reasons for wanting aggregates rather than classes to play this role.<sup>6</sup>

These two problems are *ad hominem*s against Armstrong; I mention them only to set them aside. A third problem, however, generalises to any version of strategy (c) – it is an problem for any combination of Truthmaker Maximalism with the Material Theory Thesis. In order to explain it, I'll first present it as an objection to Armstrong's account of totality states of affairs, and then show how it generalises.

The problem is this: even in the best cases, Armstrong's description of a totality state of affairs fails to explain why that totality state of affairs makes true the proposition(s) it does. Armstrong's theory gives us an account of the nature – the intrinsic properties and constituents – of a totality state of affairs; but no such description can *entail* that something other than that state of affairs does not exist. So, there is a state of affairs consisting of a certain aggregate, the totalling relation, and the universal *being a rose*; that description doesn't entail that everything disjoint from that aggregate is not a rose. Nor could any description of the nature of a general fact do so – let the general facts be tropes, or perfectly simple and unanalysable, or whatever – no material theory of general facts is possible, because it is not possible for the description of the nature of an entity to entail that something else doesn't exist.

That's the argument in outline: it has two important suppressed premises that I need to defend. First, I've assumed a broadly Hempelian account of explanation, on which an explanans must entail its explanandum. I don't think that this is too much to insist on here, for material theories of truthmaking *do* explain the truthmaking role of particular facts in this sense, as I argued in section 1. Moreover, less austere theories of explanation, causal or probabilistic theories for example, are not appropriate in the metaphysical case. In any case, I believe that my argument would also go through on more modern accounts of explanation, for example, unification accounts.<sup>7</sup>

Second, I've assumed that no covering law can help bridge the explanatory gap between the nature of general facts and their truthmaking role. In the case of particular facts, I allowed that Armstrong's explanation appeals to an analysis of instantiation as a covering law that connects the having of redness as a constituent (in the right way) with being red (and I assumed that other material theories of truthmakers will do something similar). Why cannot a similar covering law connect the nature of a totality state of affairs with its being such that those are all the men?

One answer that I might give is a Humean, metaphysical one: any such covering law would be metaphysically queer: it would correlate, with at least metaphysical necessity, an intrinsic property of a truthmaker with an extrinsic one; it would be a necessary connection between distinct existences.<sup>8</sup> This is not true of Armstrong's analysis of instantiation; but it would have to be true of any covering law that helped explain the truthmaking role of totality states of affairs.

---

5 This argument is a descendent of Quine's "triangles" (1950, sec. 3) argument that not all all properties can be identified with aggregates (as opposed to classes).

6 Though I must admit I find it difficult to understand what those reasons are. I suspect it is because he wants to reduce classes to aggregates of states of affairs (of a certain kind) in a way that is incompatible with classes being constituents of totality states of affairs. Armstrong's theory of classes has a lot of problems of its own – more, if we may count problems, than his theory of states of affairs – so it is hard to tell whether the proposed revision makes his overall system better or worse.

7 For which, see Kitcher (1989).

8 This was the premise I used in a related argument for the insolubility of the problem of general facts in my (2005); as I explain below, I am not using it here.

A better answer is explanatory: there is no reason to choose any one such law over any other. The proposed covering law simply says that if there is there is a totality state of affairs of a certain kind, then *those* are all the men. Armstrong's material theory of general facts is idle, since all it does is engage the antecedent of the covering law. He could equally well have said, like Cheyne and Pigden, that the world as a whole makes true all general truths, and that there is a metaphysically necessary covering law to the effect that if the world is as it actually is, then there are no more men than there actually are. (Or, like the perverse theory I mentioned in section 1 in order to motivate the Material Theory Thesis, that state of affairs in which the Eiffel tower and the colour red are the sole constituents makes true all general truths, and that there is a metaphysically necessary covering law to that effect).

### 2.3 Mighty biceps?

My argument here may seem to resemble another argument against a another view of Armstrong's: David Lewis's (1983) "Mighty Biceps" argument. The target in this case is Armstrong's non-Humean and necessitarian theory of laws, according to which a law of nature (say, Coulomb's Law, which describes the force with which charged objects attract or repel one another) is both distinct from, and, in some sense, makes necessary, the corresponding regularity (the fact that all charged objects behave as Coulomb's Law predicts). In Armstrong's view, laws consist in a higher-order "necessitation" relation holding between two universals; they are, like totality facts, higher order states of affairs. Lewis's criticism is this: why should the existence of such a state of affairs ensure that whatever instantiates one universal instantiates the other? There is a rhetorical slight of hand here: just because the relation is called "necessitation" doesn't entail that it deserves that name. (Lewis quips that just because a man is called "Armstrong" doesn't entail that he has mighty biceps).

I agree with the point about avoiding the rhetorical trick (as does Armstrong: in his later work, he is careful to call the necessitation relation "N", and the totalling relation, "T"). But neither my argument nor Lewis's is restricted to making that point alone. Lewis must go on to argue that the existence of an Armstrongian law-fact *does not* necessitate the obtaining of the corresponding regularity (which he does on metaphysical, Humean, grounds). I must go on to argue that the existence of an Armstrongian totality-fact does not explain the obtaining of the corresponding general truth (which I do on quite different grounds).

The point to notice here is that insofar as my argument resembles Lewis's, it is not because of any shared commitment to Humean metaphysics. One might be tempted to re-read Lewis's arguments for Humeanism in the light of my arguments from explanation – in effect to argue from premises about the nature of metaphysical explanation to metaphysical Humeanism. But that would be a very grand project indeed and I am not sure that it would succeed.

### 2.4 Metaphysical explanation?

It's fashionable these days to hold that there is an autonomous type of metaphysical explanation, distinct from deductive-nomological explanation, and distinct from any type of explanation given in the sciences (but analogous to causal explanation). If this is so, then an important premise of my argument is false. It may of course still be that my conclusion is true – that a material theory of general facts is impossible by the standards of metaphysical explanation (whatever they are). That is unlikely, however, because these theories of metaphysical explanation have been carefully crafted to give metaphysicians work to do – to predict that the explanations actually given by metaphysicians (truthmaker theorists included) are good explanations. That, in itself, is reason to be skeptical. The fashion for metaphysical explanation seems to me to be a pernicious great leap backwards into a pre-scientific, "first philosophy" mode of thinking, in which metaphysics has its own set of rules,

autonomous from any other type of inquiry. It leaves metaphysics too unconstrained to be worth doing.

I'm aware I may be sounding like a positivist. But we should all agree with the positivists that unconstrained theorising is bad; some questions *are* idle – perhaps the question of whether the Nothing noths, or perhaps the question of whether the Holy Spirit proceeds from the Father and the Son together or from the Father alone. The positivists' mistake was to suppose that it should be easy to determine which questions are idle on apriori grounds.<sup>9</sup> Relatedly, the positivists tacitly (and hypocritically) accepted their own apriori first philosophy. The verification principle in fact makes very bad predictions concerning which statements are meaningful – existentialist and theological discourse do not *appear* to be mere nonsense – but, of course, the positivists didn't accept the principle on empirical grounds. Rather, they accepted it for the same bad reasons that many metaphysicians now accept autonomous metaphysical explanation: because it gave them work to do – the work of denouncing large swathes of philosophy as meaningless.

I do not want to repeat that error. I reject the theory of autonomous metaphysical explanation not because it gives me an excuse to commit works of metaphysics to the flames, but because explanation must be univocal. What we are trying to do in metaphysics is the same as, in some general way – and not just analogous to – what theoretical scientists and mathematicians are trying to do. There must therefore be a unified theory of explanation, and the Hempelian model is closer to that than any theory of autonomous metaphysical explanation.

### 3 Whither truthmaker theory?

Suppose that my argument has been correct so far; suppose that it is impossible to give a material theory of general facts, and so the Material Theory Thesis is inconsistent with Truthmaker Maximalism. How should truthmaker theory proceed?

There are two options: either reject Maximalism, or reject the Material Theory Thesis (or both, of course). Suppose we reject Maximalism. That seems the most reasonable option to me. I'm impressed by the ability of Armstrong's theory (and others like it) to explain why states of affairs make true the propositions that they do, even on the very austere sense of explanation that I have demanded. However, without Maximalism, truthmaker theory doesn't seem very useful or interesting. The point of truthmaker theory is supposed to be to force us not to shirk metaphysical responsibilities, or to not rest content with theories such as Rylean behaviourism that appear to do so. But without Maximalism it's easy for any shirker to say “Oh, that's just another kind of truth that lacks a truthmaker.”

Suppose, on the other hand, we reject the Material Theory Thesis. I can't survey all possible truthmaker theories that do this, but I suspect that they all involve another kind of shirking. As an example, consider the following type of truthmaker theory, that some people appear to hold. This view rejects the existence-entailment account of truthmaking that I have been assuming in this paper. It holds that truthmakers cannot properly be said to exist or not exist at all; rather they obtain or don't obtain. Nor does it make sense to ask about the constituents or nature of truthmakers – these questions, on this view, commit a category mistake, treating facts as if they were things. All that can be said about a fact, on this view, is that it is the fact that such-and-such; that it obtains; or that it doesn't obtain. That's a way of rejecting the Material Theory Thesis; but it's far gone in shirking of metaphysical responsibilities. This is no theory of truthmakers at all, but the determination to carry on talking about them without any accompanying desire to take such talk seriously. Such a view is incapable of critiquing Rylean behaviourism and its fellow travellers; it is itself one of them. I'm guessing that any truthmaker theory that rejects the Material Theory Thesis will feel a bit like that.

---

<sup>9</sup> A mistake, which I fear, has not left the world – see (McLeod and Parsons 2013).

## References

- Armstrong, D. M. 1997. *A World of States of Affairs*. Cambridge University Press.
- Bigelow, John. 1988. *The Reality of Numbers: A Physicalist's Philosophy of Mathematics*. Oxford University Press.
- Cheyne, Colin, and Charles Pigden. 2006. "Negative Truths from Positive Facts." *Australasian Journal of Philosophy* 84 (2): 249–65.
- Hempel, Carl G. (Carl Gustav). 1966. *Philosophy of Natural Science*. Englewood Cliffs: Prentice-Hall.
- Kitcher, Philip. 1989. "Explanatory Unification and the Causal Structure of the World." In *Scientific Explanation*, edited by Philip Kitcher and Wesley Salmon, 410–505. Minneapolis: University of Minnesota Press.
- Lewis, David. 1983. "New Work for a Theory of Universals." *Australasian Journal of Philosophy* 61 (4): 343–77. doi:10.1080/00048408312341131.
- Linsky, Bernard, and Edward N. Zalta. 1994. "In Defense of the Simplest Quantified Modal Logic." *Philosophical Perspectives* 8 (January): 431–58. doi:10.2307/2214181.
- McLeod, Mike, and Josh Parsons. 2013. "Maclaurin and Dyke on Analytic Metaphysics." *Australasian Journal of Philosophy* 91 (1): 173–78. doi:10.1080/00048402.2012.730534.
- Mulligan, Kevin, Peter Simons, and Barry Smith. 1984. "Truth-Makers." *Philosophy and Phenomenological Research* 44 (3): 287–321.
- Parsons, Josh. 1999. "There Is No 'truthmaker' Argument against Nominalism." *Australasian Journal of Philosophy* 77 (3): 325–34. doi:10.1080/00048409912349081.
- . 2005. "Truthmakers, the Past, and the Future." In *Truthmakers: The Contemporary Debate*, edited by Helen Beebe and Julian Dodd, 161–74. Oxford University Press, USA.
- . 2006. "Negative Truths from Positive Facts?" *Australasian Journal of Philosophy* 84 (4): 591–602. doi:10.1080/00048400601079144.
- Quine, W. V. 1950. "Identity, Ostension, and Hypostasis." *The Journal of Philosophy* 47 (22): 621–33. doi:10.2307/2021795.
- Russell, Bertrand. 1985. *The Philosophy of Logical Atomism*. Edited by David Pears. La Salle, Ill: Open Court.
- Simons, Peter. 1992. "Logical Atomism and Its Ontological Refinement." In *Language, Truth and Ontology*, edited by Kevin Mulligan, 157–79. Dordrecht ; London: Kluwer Academic.
- Timothy Williamson. 2013. *Modal Logic as Metaphysics*. Oxford University Press.